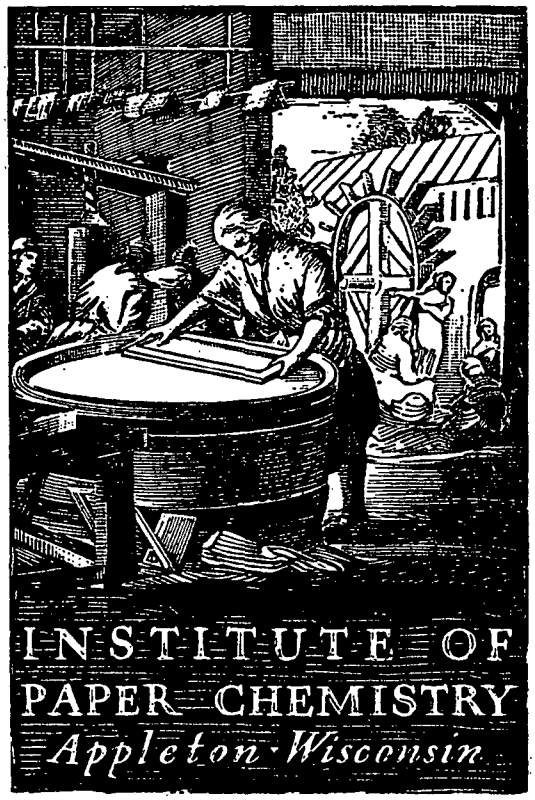

CONTINUOUS BASE-LINE STUDY

Project 1108-13

Report 182

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

April 1, 1963

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASE-LINE STUDY

INTRODUCTION

As requested by the Technical Committee of the Fourdrinier Kraft Board Institute, Inc., the reports pertinent to the continuous base-line study on 42-lb. fourdrinier kraft linerboard are now being prepared by The Institute of Paper Chemistry on a bimonthly basis instead of the previous monthly basis. This new system was initiated on August 1, 1961. This report is the tenth under the new system and presents results obtained during the months of February and March, 1963.

PRESENTATION AND DISCUSSION OF TEST RESULTS

Each sample lot received for evaluation during February and March was evaluated for basis weight, caliper, bursting strength, and Elmendorf tearing strength. The average strength results for each mill may be seen in Table I and are graphically presented in Fig. 1 to 5. In addition to a comparison of the current mill averages for the various tests, Table I also shows the current F.K.I. averages, the cumulative F.K.I. averages, and F.K.I. indexes. For each test, the current mill average represents the average obtained on all sample lots evaluated during a given period, the current F.K.I. average represents the average of the current mill averages, and the cumulative F.K.I. average represents the average of the current F.K.I. averages for the previous twelve months excluding the current period. The F.K.I. index expressed in per cent is the ratio of the current F.K.I. average to the cumulative F.K.I. average.

In Table II, a tabulation of the number of sample lots submitted by each mill during February and March is shown.

Supplementary to the basis weight data given in Table I, a tabulation is given in Table III of the amount by which the basis weight average for each mill varies from the 42-lb. specification set forth in Rule 41.

Shown below from Table I are the maximum and minimum current mill averages for each test and also the current and cumulative F.K.I. averages.

TABLE I

SUMMARY OF COMPOSITE MILL AVERAGES--FEBRUARY 1 THROUGH MARCH 31, 1963

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage	Elmendorf Tear, g./sheet	
				In Machine	Cross Machine
A	42.1	12.6	113	357	411
B	43.3	13.3	107	325	368
C	No samples submitted				
D	42.5	12.2	107	302	357
E	43.4	12.3	107	351	394
F	42.8	12.6	102	293	382
G	42.9	13.0	112	297	356
H	43.2	13.7	113	301	359
I	42.0	12.2	102	346	391
J	42.2	13.2	112	279	336
K	43.4	13.0	112	339	392
L	43.3	12.5	115	336	394
M	44.4	13.6	95	398	427
N	No samples submitted				
O	43.0	12.3	114	316	360
P	43.3	13.6	103	364	395
Q	43.0	11.6	108	352	396
S	43.3	12.5	107	364	416
T	42.9	12.5	111	365	372
U	42.5	13.0	108	328	380
V	43.7	12.9	106	312	358
W	43.7	11.9	120	318	358
Current FKI average:	43.0	12.7	109	332	380
Cumulative FKI average:	42.9	12.7	109	327	373
FKI index, %	100.2	100.0	100.0	101.5	101.9

TABLE II

NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL
FEBRUARY AND MARCH, 1963

Mill Code	Number of Sample Lots
A	5
B	8
C	0
D	16
E	9
F	2
G	6
H	8
I	4
J	7
K	7
L	6
M	1
N	0
O	8
P	2
Q	8
S	4
T	4
U	6
V	4
W	1
Total	116

TABLE III

PERCENTAGE DEVIATION FROM 42-LB. BASIS WEIGHT SPECIFICATION

Mill Code	Percentage Deviation
A	+0.2
B	+3.1
C	--
D	+1.2
E	+3.3
F	+1.9
G	+2.1
H	+2.9
I	0.0
J	+0.5
K	+3.3
L	+3.1
M	+5.7
N	--
O	+2.4
P	+3.1
Q	+2.4
S	+3.1
T	+2.1
U	+1.2
V	+4.0
W	+4.0

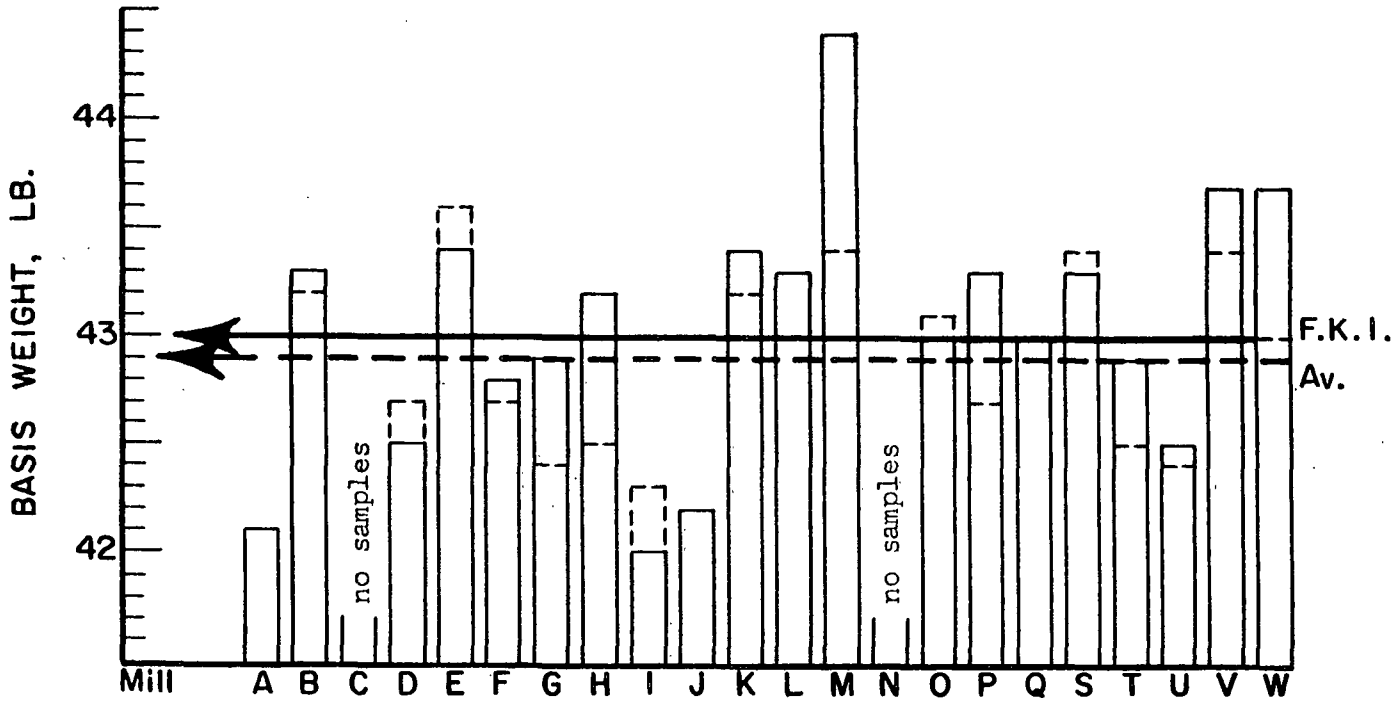

Figure 1. Comparison of Basis Weight Results

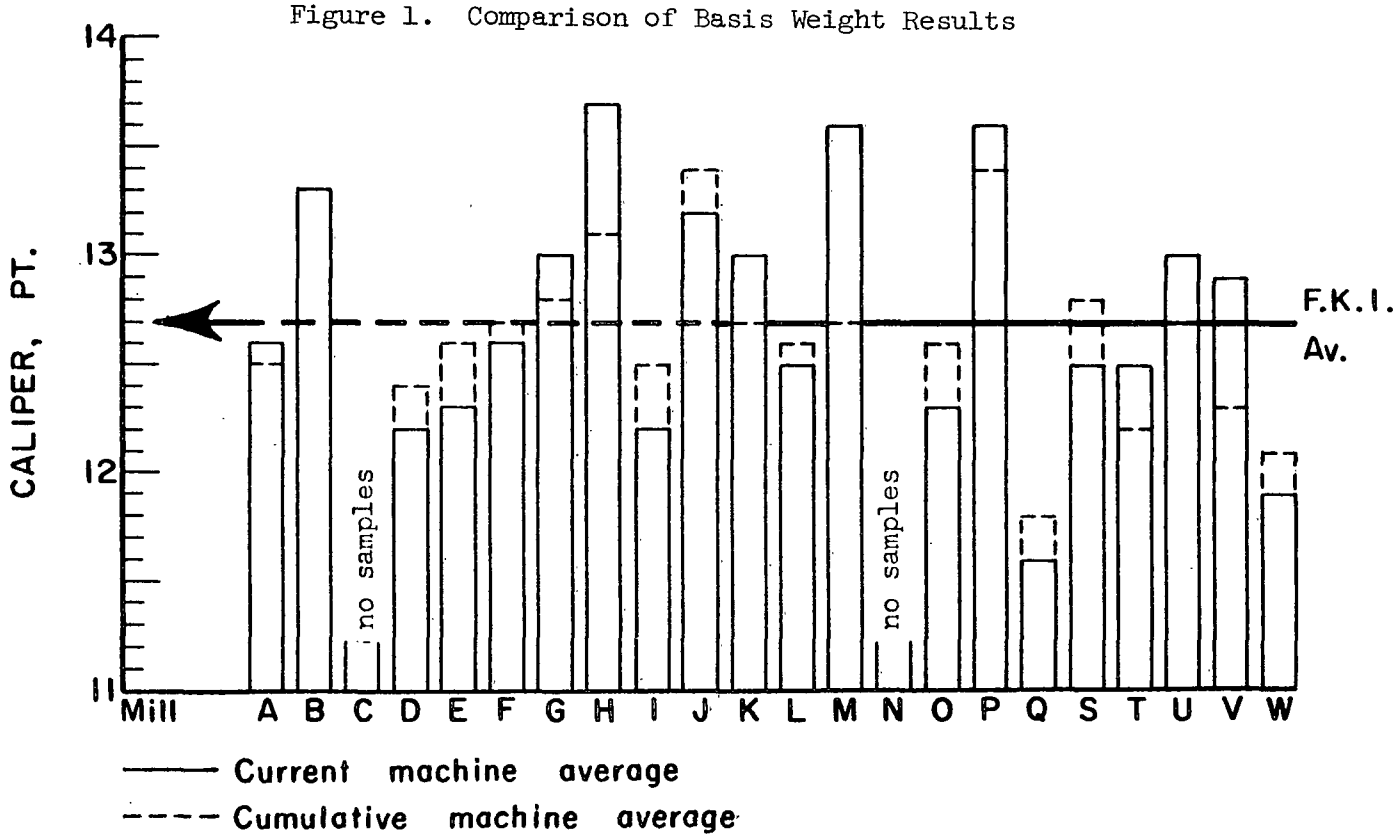

Figure 2. Comparison of Caliper Results

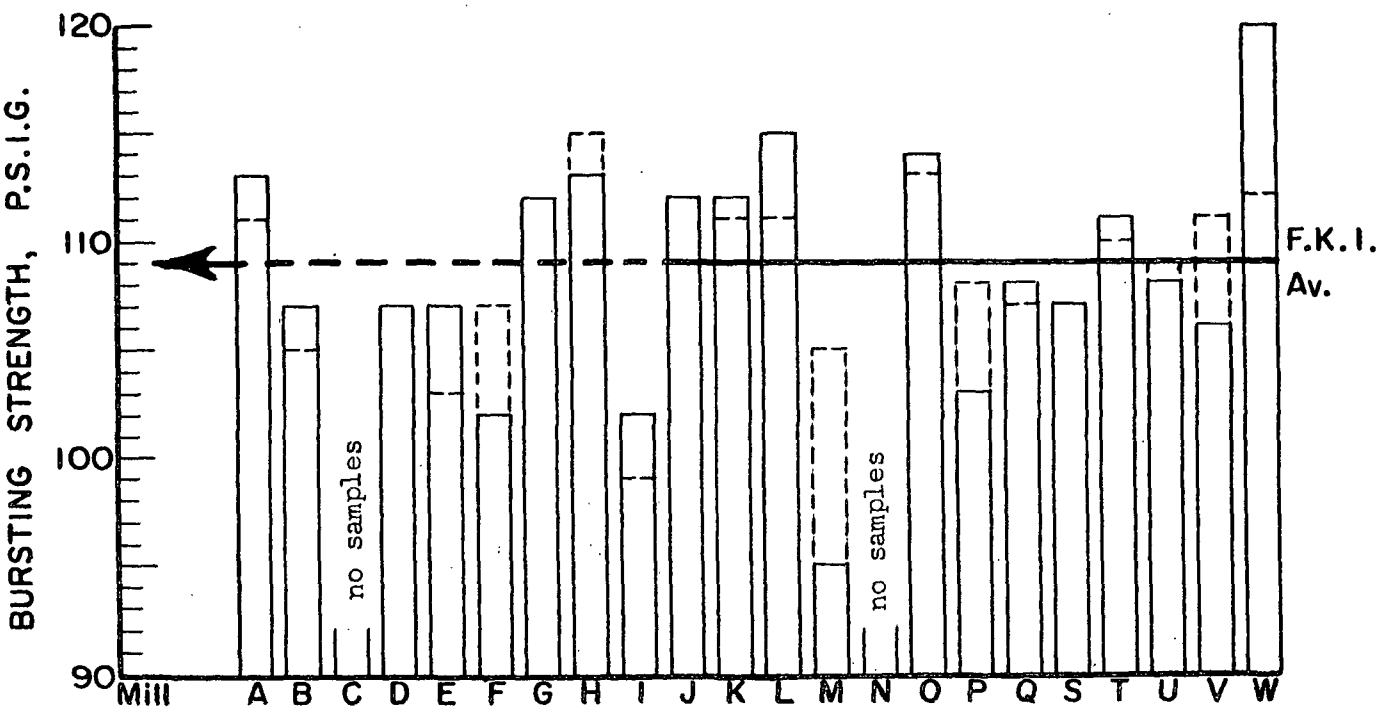

Figure 3. Comparison of Bursting Strength Results

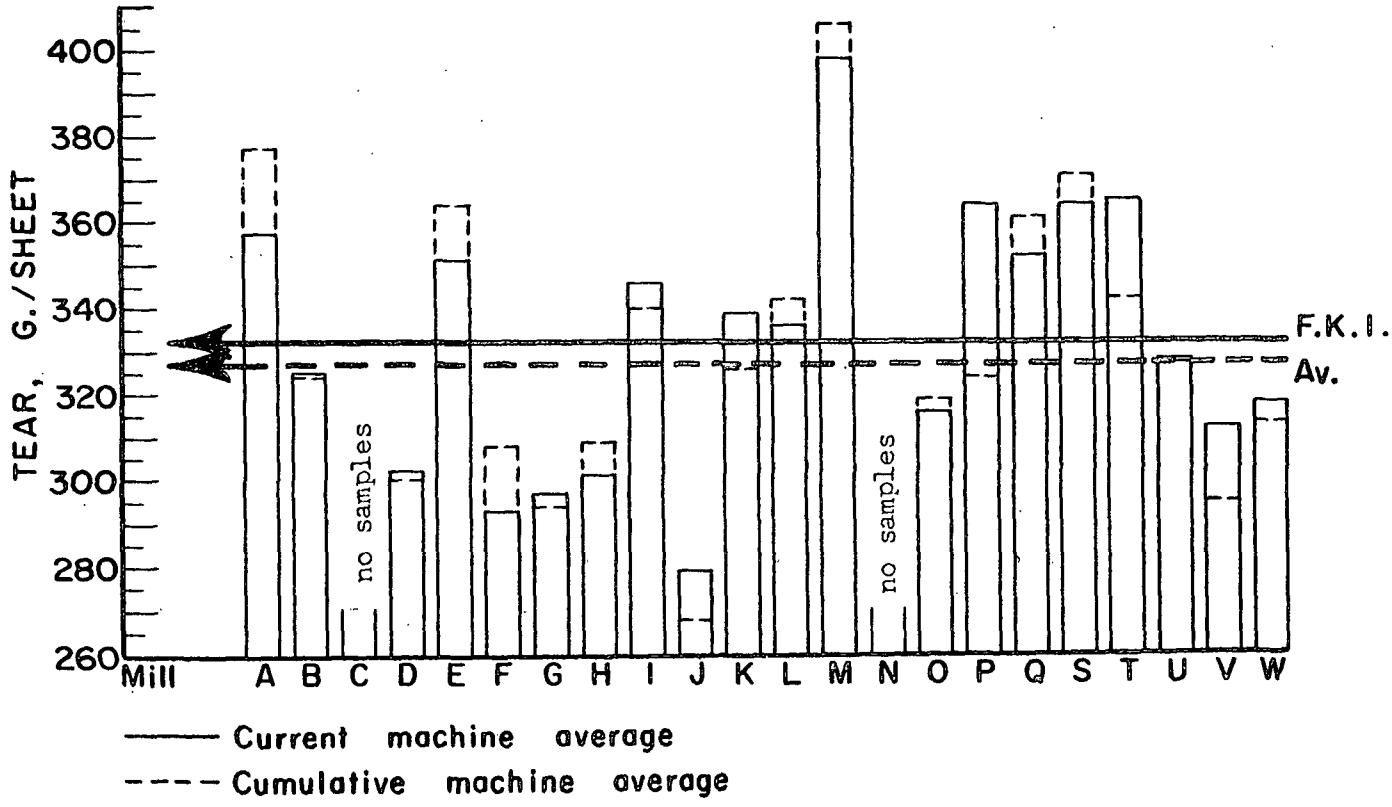

Figure 4. Comparison of Machine-Direction Tear Results

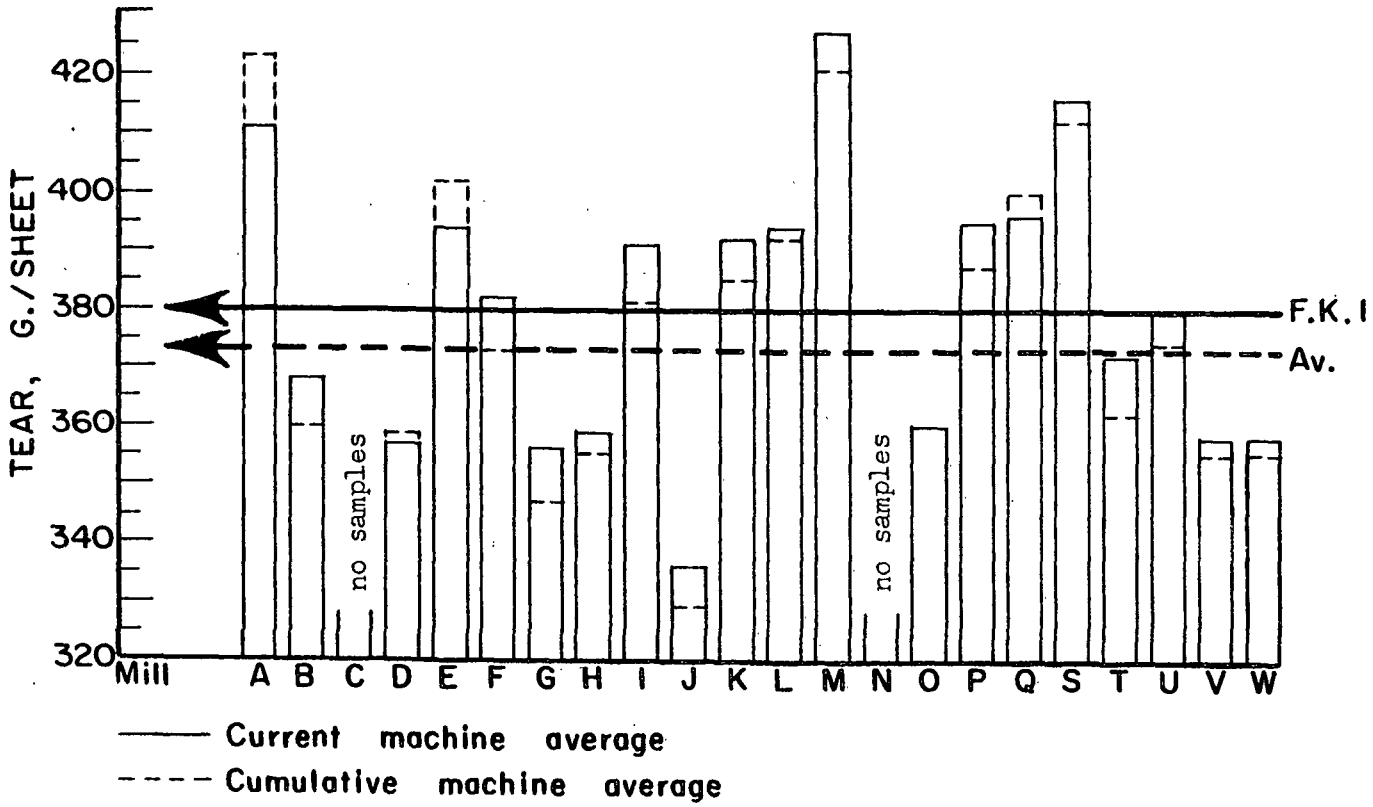

Figure 5. Comparison of Cross-Machine Direction Tear Results

Test	Current Mill Averages Max.	Min.	F.K.I. Averages Current	Cumulative
Basis weight, lb.	44.4	42.0	43.0	42.9
Caliper, points	13.7	11.6	12.7	12.7
Bursting strength, p.s.i. gage	120	95	109	109
Machine direction Elmendorf tear, g./sheet	398	279	332	327
Cross-machine direction Elmendorf tear, g./sheet	427	336	380	373

The test results obtained at the Institute and at the mill during February and March are given alphabetically in Tables IV to XXV for each mill. Included in each of these tables are the maximum, minimum and average test data obtained at the Institute on each sample lot of linerboard. The data obtained at the Institute include also for each test the calculation of (1) a current mill average that represents the mean of the averages obtained on the individual sample lots of linerboard evaluated during the current period, (2) a cumulative mill average that represents the mean of the current mill averages for the previous twelve months excluding the current period, (3) a mill factor expressed in per cent that represents the ratio of the current mill average to the cumulative mill average, and (4) a mill index expressed in per cent that represents the ratio of the current mill average to the cumulative F.K.I. average. The term "mean" in the preceding discussion is synonymous with the simple arithmetic average. As mentioned above, the results presented in Tables IV to XXV also include data obtained at the mills. The mill data include for each test (1) the average results obtained on each sample lot of linerboard and (2) a current mill average (calculated at the Institute) that represents the mean of the average obtained on the individual sample lots of linerboard. In addition to the presentations of Institute

TABLE IV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL A

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
1-18-63	MSF	1	43.6	42.0	42.4	42.7	+0.3	13.8	12.0	13.0	12.7	-0.3	141	87	114	125	+11	416	304	364[a]	310	-54	464	392	429[a]	374	-55
2- 1-63	MSF	1	43.6	42.0	42.7	42.8	+0.1	13.2	12.0	12.8	12.4	-0.4	131	90	115	120	+ 5	472	320	387[a]	321	-66	472	368	426[a]	394	-32
2-14-63	MSF	1	44.0	40.0	42.2	42.2	0.0	13.4	11.0	12.4	12.2	-0.2	139	89	115	123	+ 8	400	304	351[a]	283	-68	448	352	398[a]	348	-50
2- 2-63	MSF	1	42.6	40.0	41.4	42.2	+0.8	13.1	11.3	12.3	12.3	0.0	131	79	109	121	+12	392	296	342	323	-19	464	376	403[a]	369	-34
2-27-63	---	1	42.8	41.0	41.8	41.9	+0.1	13.1	11.6	12.4	11.9	-0.5	133	74	113	114	+ 1	440	280	339	296	-43	448	344	397[a]	343	-54
Current mill average:					42.1	42.3	+0.2			12.6	12.3	-0.3			113	121	+ 8			357	307	-50			411	365	-46
Cumulative mill average:					42.1					12.5					111					377					423		
Mill factor, %					100.0					100.8					101.8					94.7					97.2		
Mill index, %					98.1					99.2					103.7					109.2					110.2		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE V

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL B

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
1- 2-63	--	1	44.2	42.2	43.2	43.5	+0.3	14.1	12.9	13.5	13.3	-0.2	125	80	108	105	- 3	336	256	305[a]	288	-17	400	320	361[a]	348	-13
1- 6-63	--	1	44.2	42.2	43.4	43.4	0.0	14.4	13.3	13.7	13.2	-0.5	127	83	107	105	- 2	384	272	314[a]	291	-23	400	320	351[a]	349	- 2
1- 5-63	--	1	43.6	42.0	42.4	42.5	+0.1	13.8	12.5	13.2	12.7	-0.5	143	86	109	104	- 5	336	272	298[a]	265	-33	384	304	336[a]	333	- 3
1-16-63	--	1	45.0	43.0	44.0	44.2	+0.2	13.7	12.3	13.1	12.8	-0.3	129	80	105	106	+ 1	416	320	364	352	-12	416	328	365[a]	365	0
2- 2-63	--	1	44.8	42.4	43.6	44.0	+0.4	14.0	12.9	13.5	13.2	-0.3	132	83	106	104	- 2	392	312	345[a]	308	-37	448	352	406[a]	373	-33
2- 3-62	--	1	44.0	42.0	42.5	43.0	+0.5	13.3	12.0	12.8	12.6	-0.2	134	81	105	103	- 2	376	280	332[a]	299	-33	416	352	378[a]	354	-24
2-12-63	--	1	44.0	42.0	43.4	43.8	+0.4	14.0	13.0	13.5	13.1	-0.4	131	82	107	108	+ 1	368	304	331	301	-30	432	344	381[a]	370	-11
2-27-62	--	1	45.6	42.6	43.9	44.5	+0.6	14.2	12.5	13.2	12.9	-0.3	131	81	106	102	- 4	376	264	311[a]	292	-19	424	328	362[a]	360	- 2
Current mill average:						43.3	43.6	+0.3				13.3	13.0	-0.3				107	105	- 2			325	299	-26			368	357	-11
Cumulative mill average:						43.2						13.3						105					324					360		
Mill factor, %						100.2						100.0						101.9					100.3					102.2		
Mill index, %						100.9						104.7						98.2					99.4					98.7		

TABLE VI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL C

No samples submitted

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE VII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL D

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
1-23-63	W.F.	1	43.8	42.0	43.0	42.9	-0.1	13.0	12.1	12.5	12.2	-0.3	127	84	103	107	+ 4	336	248	294[a]	251	-43	416	320	373[a]	355	-18
1-24-63	W.F.	1	43.4	41.8	42.4	42.3	-0.1	12.9	12.0	12.5	12.3	-0.2	126	86	106	110	+ 4	312	248	280[a]	242	-38	376	304	340[a]	351	+11
1-25-63	W.F.	1	43.6	42.2	42.8	42.5	-0.3	13.0	11.9	12.5	12.2	-0.3	121	75	105	112	+ 7	360	256	310[a]	246	-64	384	336	350[a]	361	+11
1-26-63	W.F.	1	42.2	41.6	41.9	42.0	+0.1	12.5	11.4	12.1	12.0	-0.1	119	77	101	108	+ 7	328	208	287[a]	233	-54	384	304	341[a]	347	+ 6
2- 5-63	W.F.	1	43.6	41.0	42.2	42.6	+0.4	12.6	11.6	12.1	11.9	-0.2	128	91	108	110	+ 2	336	240	293[a]	249	-44	360	296	333[a]	315	-18
2- 6-63	W.F.	1	43.6	42.0	42.9	43.4	+0.5	13.0	11.6	12.3	12.0	-0.3	128	92	108	112	+ 4	344	256	287	270	-17	400	320	362[a]	357	- 5
2- 8-63	W.F.	1	43.2	41.4	42.3	42.7	+0.4	12.4	11.5	11.9	11.7	-0.2	126	82	106	107	+ 1	368	264	303[a]	272	-31	368	288	333[a]	338	+ 5
2-10-63	W.F.	1	42.2	40.6	41.7	42.2	+0.5	12.8	11.8	12.2	11.8	-0.4	124	87	109	111	+ 2	328	248	287[a]	282	- 5	392	304	359[a]	366	+ 7
2-14-63	W.F.	1	44.0	41.6	42.7	43.0	+0.3	12.7	11.3	12.0	12.1	+0.1	138	95	111	110	- 1	424	256	315	271	-44	384	304	368[a]	349	-19
2-16-63	W.F.	1	44.2	42.0	43.1	43.3	+0.2	13.2	11.6	12.5	12.4	-0.1	127	88	107	109	+ 2	344	272	311[a]	275	-36	416	336	367[a]	354	-13
2-19-63	W.F.	1	42.4	41.0	41.9	42.7	+0.8	12.8	11.7	12.2	12.0	-0.2	125	94	108	109	+ 1	352	240	309[a]	280	-29	392	352	367[a]	367	0
2-21-63	W.F.	1	44.0	42.0	43.1	43.6	+0.5	13.1	11.9	12.5	12.4	-0.1	121	82	103	109	+ 6	392	304	335[a]	274	-61	416	344	377[a]	366	-11
3- 1-63	W.F.	1	43.6	42.0	42.4	42.4	0.0	12.5	11.7	12.1	11.7	-0.4	125	84	110	113	+ 3	352	256	293[a]	258	-35	376	320	342[a]	338	- 4
3-11-63	W.F.	1	42.2	42.0	42.1	42.4	+0.3	13.1	11.4	12.1	11.8	-0.3	126	83	106	110	+ 4	344	224	287[a]	268	-19	416	288	352[a]	350	- 2
3-15-63	W.F.	1	43.2	42.0	42.4	42.6	+0.2	13.2	11.4	12.3	11.9	-0.4	132	78	106	111	+ 5	352	264	317[a]	278	-39	400	288	352[a]	379	+27
3-13-63	W.F.	1	44.0	42.2	43.2	43.4	+0.2	13.0	12.0	12.3	11.9	-0.4	135	90	112	113	+ 1	376	264	322[a]	297	-25	448	360	403[a]	384	-19
Current mill average:					42.5	42.8	+0.3			12.2	12.0	-0.2			107	110	+ 3			302	265	-37			357	355	- 2
Cumulative mill average:					42.7					12.4					107					300					359		
Mill factor, %					99.5					98.4					100.0					100.7					99.4		
Mill index, %					99.1					96.1					98.2					92.4					95.7		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE VIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL E

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
1-21-63	WF1S	2	44.0	43.2	43.7	43.6	-0.1	13.0	12.0	12.7	12.4	-0.3	118	81	102	106	+ 4	432	320	372	---	---	408	320	378[a]	---	---
1-23-63	WF1S	1	43.8	41.4	42.4	43.2	+0.8	13.3	12.1	12.7	12.4	-0.3	108	84	94	102	+ 8	424	288	343	---	---	408	304	354[a]	---	---
2- 8-63	WF1S	2	44.2	41.0	42.6	43.0	+0.4	12.5	11.6	12.0	12.0	0.0	126	80	110	119	+ 9	392	304	345	---	---	448	384	405[a]	---	---
2-11-63	WF1S	2	44.6	42.6	43.7	43.4	-0.3	12.0	11.2	11.7	11.8	+0.1	134	91	110	117	+ 7	392	304	339	---	---	440	360	399[a]	---	---
2-15-63	----	1	44.8	42.0	43.6	43.9	+0.3	13.7	12.6	13.0	13.0	0.0	128	80	102	106	+ 4	424	304	372[a]	---	---	448	344	391[a]	---	---
3-11-63	WF1S	1	44.6	42.0	43.6	44.1	+0.5	13.2	12.0	12.7	12.6	-0.1	123	95	112	105	- 7	360	312	341	---	---	416	368	383[a]	---	---
3-12-63	WF1S	2	44.2	42.2	43.2	43.9	+0.7	12.4	11.3	11.8	11.9	+0.1	136	95	112	110	- 2	400	304	346	---	---	432	376	393[a]	---	---
3-13-63	WF1S	2	45.4	43.0	44.0	44.4	+0.4	12.8	12.0	12.4	12.2	-0.2	134	95	111	107	- 4	440	304	356[a]	---	---	456	392	419[a]	---	---
3-14-63	WF1S	2	44.4	43.6	43.9	43.9	0.0	12.8	11.6	12.1	12.0	-0.1	127	91	114	107	- 7	384	304	344[a]	---	---	464	384	421[a]	---	---
Current mill average:					43.4	43.7	+0.3			12.3	12.3	0.0			107	109	+ 2			351					394		
Cumulative mill average:					43.6					12.6					103					364					402		
Mill factor, %					99.5					97.6					103.9					96.4					98.0		
Mill index, %					101.2					96.9					98.2					107.3					105.6		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE IX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL F

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Min.	Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Min.	Av.	Mill Av.	Diff.	Bursting Strength, p.s.i. gage Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Min.	Av.	Mill Av.	Diff.
1-23-63	WF1S	1	43.8	41.8	42.8	42.6	-0.2	13.3	12.0	12.6	12.3	-0.3	114	84	104	106	+ 2	328	256	294	332	+38	432	336	376[a]	411	+35
2-26-63	WF1S	1	44.0	41.6	42.8	42.5	-0.3	13.2	12.0	12.6	12.2	-0.4	118	81	100	106	+ 6	376	224	293[a]	322	+29	488	336	389[a]	384	- 5
Current Mill average:					42.8	42.5	-0.3			12.6	12.3	-0.3			102	106	+ 4			293	327	+34			382	398	+16
Cumulative mill average:					42.7					12.7					107					308					373		
Mill factor, %					100.2					99.2					95.3					95.1					102.4		
Mill index, %					99.8					99.2					93.6					89.6					102.4		

TABLE X

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL G

1-18-63	W.F.	1	44.0	43.0	43.5	42.9	-0.6	13.8	12.6	13.0	13.1	+0.1	135	85	110	112	+ 2	336	248	295	268	-27	400	312	356[a]	352	- 4
1-26-63	W.F.	1	43.8	42.2	43.2	42.9	-0.3	13.0	12.3	12.7	12.8	+0.1	141	87	116	114	- 2	352	256	291[a]	240	-51	384	304	347[a]	328	-19
2- 5-63	W.F.	1	42.8	42.0	42.3	42.6	+0.3	13.4	12.6	13.0	13.0	0.0	140	82	113	110	- 3	344	264	299[a]	249	-50	400	328	363[a]	334	-29
2-14-63	W.F.	1	44.0	43.0	43.4	42.8	-0.6	13.6	12.7	13.2	13.2	0.0	139	83	115	116	+ 1	360	248	297[a]	262	-35	408	304	358[a]	364	+ 6
2-23-63	W.F.	1	43.6	42.4	43.2	42.5	-0.7	13.3	12.4	13.0	13.1	+0.1	138	91	117	118	+ 1	368	256	303	279	-24	384	328	361[a]	355	- 6
2-28-63	W.F.	1	42.2	41.6	41.9	42.4	+0.5	13.6	13.0	13.2	13.3	+0.1	130	79	103	108	+ 5	320	272	296	268	-28	424	320	349[a]	339	-10
Current mill average:					42.9	42.7	-0.2			13.0	13.1	+0.1			112	113	+ 1			297	261	-36			356	346	-10
Cumulative mill average:					42.4					12.8					112					294					347		
Mill factor, %					101.2					101.6					100.0					101.0					102.6		
Mill index, %					100.0					102.4					102.8					90.8					95.4		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL H

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
1-31-63	WF1S	2	44.4	43.0	43.6	44.3	+0.7	15.1	13.2	14.2	14.2	0.0	138	79	110	112	+ 2	336	232	294[a]	311	+17	400	336	367[a]	400	+33
2- 4-63	WF1S	2	44.0	43.4	43.7	43.3	-0.4	14.6	13.4	14.0	13.5	-0.5	141	85	117	115	- 2	416	224	301[a]	304	+ 3	384	328	347[a]	351	+ 4
2-10-63	WF1S	2	42.4	41.4	42.0	42.3	+0.3	13.9	12.2	13.0	12.8	-0.2	139	93	114	118	+ 4	344	240	306[a]	297	- 9	416	320	362[a]	366	+ 4
2-14-63	WF1S	2	44.6	43.0	43.8	44.0	+0.2	14.0	13.0	13.5	13.4	-0.1	134	79	107	110	+ 3	384	272	317[a]	325	+ 8	448	336	385[a]	414	+29
2-26-63	WF1S	2	44.2	43.4	43.8	44.0	+0.2	15.0	14.0	14.2	13.8	-0.4	135	97	117	114	- 3	360	256	303[a]	294	- 9	376	328	355[a]	362	+ 7
3- 2-63	WF1S	2	42.8	41.6	42.1	42.3	+0.2	13.1	12.3	12.8	12.0	-0.8	135	85	110	104	- 6	320	248	287[a]	263	-24	384	304	348[a]	340	- 8
3- 4-63	WF1S	2	44.2	42.4	43.6	43.7	+0.1	15.0	14.0	14.6	13.4	-1.2	155	86	116	108	- 8	360	264	315[a]	286	-29	416	336	363[a]	388	+25
3-14-63	WF1S	2	44.0	42.0	42.8	43.1	+0.3	13.8	12.8	13.2	12.3	-0.9	137	92	116	110	- 6	336	240	288	274	-14	376	320	346[a]	374	+28
Current mill average:					43.2	43.4	+0.2			13.7	13.2	-0.5			113	111	- 2			301	294	- 7			359	374	+15
Cumulative mill average:					42.5					13.1					115					305					355		
Mill factor, %					101.6					104.6					98.3					97.4					101.1		
Mill index, %					100.7					107.9					103.7					92.0					96.2		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL I

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
1-22-63	S.F.	7	42.4	40.2	41.6	42.6	+1.0	12.7	11.7	12.1	12.3	+0.2	123	82	103	---	--	392	288	329[a]	348	+19	448	344	381[a]	386	+ 5
2- 5-63	S.F.	7	44.2	41.2	42.3	42.8	+0.5	13.2	12.0	12.7	12.5	-0.2	117	72	94	102	+ 8	352	296	329	335	+ 6	424	304	375[a]	369	- 6
2-18-63	S.F.	7	43.4	41.0	42.2	42.7	+0.5	12.8	11.2	12.0	12.0	0.0	127	81	106	109	+ 3	408	320	357	355	- 2	456	368	403[a]	391	-12
3-12-63	S.F.	7	43.8	40.0	41.9	42.7	+0.8	12.6	11.2	12.1	12.3	+0.2	133	84	103	102	- 1	432	312	369[a]	387	+18	448	352	405[a]	433	+28
Current mill average:					42.0	42.7	+0.7			12.2	12.3	+0.1			102	---[b]	--			346	356	+10			391	395	+ 4
Cumulative mill average:					42.3					12.5					99					340					381		
Mill factor, %					99.3					97.6					103.0					101.8					102.6		
Mill index, %					97.9					96.1					93.6					105.8					104.8		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.
[b]No composite mill average was calculated because one of the mill values was missing.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL J

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
1-18-63	WF1S	1	42.2	41.8	42.0	42.4	+0.4	14.0	13.0	13.3	13.2	-0.1	135	90	115	108	- 7	304	192	247[a]	287	+40	352	240	307[a]	362	+55
1-23-63[b]	WF1S	1	44.0	42.0	42.3	42.0	-0.3	14.4	13.3	13.9	12.8	-1.1	130	86	108	112	+ 4	360	248	291[a]	281	-10	400	304	343[a]	345	+ 2
1-25-63	WF1S	1	45.0	42.0	42.4	41.3	-1.1	13.4	12.7	13.0	12.5	-0.5	137	104	120	120	0	368	272	303	275	-28	408	336	357[a]	362	+ 5
1- 3-63	WF1S	1	43.4	41.4	41.9	41.7	-0.2	13.2	12.2	12.7	12.3	-0.4	142	88	115	113	- 2	304	256	279	284	+ 5	360	312	332[a]	360	+28
2-17-63	WF1S	1	43.0	41.8	42.1	42.0	-0.1	13.0	12.1	12.5	12.1	-0.4	132	96	113	120	+ 7	344	256	284	252	-32	384	320	349[a]	331	-18
2- 8-63	WF1S	1	43.8	42.0	42.3	42.2	-0.1	14.0	13.0	13.5	12.8	-0.7	129	89	105	112	+ 7	320	248	279[a]	285	+ 6	336	320	331[a]	355	+24
2-27-63	WF1S	1	42.4	41.8	42.0	42.1	+0.1	13.8	12.5	13.1	12.4	-0.7	123	87	107	114	+ 7	344	248	272	288	+16	368	280	329[a]	348	+19
Current mill average:					42.2	41.9	-0.3			13.2	12.6	-0.6			112	114	+ 2			279	279	0			336	352	+16
Cumulative mill average:					42.2					13.4					112					268					329		
Mill factor, %					100.0					98.5					100.0					104.1					102.1		
Mill index, %					98.4					103.9					102.8					85.3					90.1		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.
[b]This date appearedon the sample received by the Institute. The mill data sheet gives the date of manufacture as January 19, 1963

Note: All "Current mill average" data are calculated from the totals of the individual readings.

TABLE XIV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL K

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
1-23-63	W.F.	1	44.6	43.6	44.0	43.7	-0.3	13.8	12.5	13.2	13.1	-0.1	138	85	115	111	- 4	360	304	335[a]	342	+ 7	424	320	367[a]	382	+15
1-23-63	W.F.	1	44.2	43.4	43.9	43.5	-0.4	13.7	12.4	13.2	13.1	-0.1	135	96	115	112	- 3	416	288	327	335	+ 8	456	344	392[a]	383	- 9
2-12-63	W.F.	2	44.2	42.2	43.5	43.3	-0.2	14.0	12.5	13.4	13.2	-0.2	127	82	106	108	+ 2	392	296	352[a]	339	-13	440	352	407[a]	409	+ 2
2-13-63	W.F.	2	43.0	42.0	42.4	41.9	-0.5	13.0	11.9	12.2	12.4	+0.2	128	78	113	112	- 1	368	280	335[a]	315	-20	432	344	389[a]	392	+ 3
2-13-63	W.F.	2	42.8	42.0	42.2	42.1	-0.1	12.6	11.9	12.2	12.4	+0.2	128	100	114	111	- 3	416	272	330	319	-11	432	352	385[a]	388	+ 3
2-14-63	W.F.	1	44.2	43.6	43.9	43.5	-0.4	13.7	12.9	13.3	13.1	-0.2	137	70	112	111	- 1	384	288	344	329	-15	432	368	387[a]	411	+24
2-14-63	W.F.	1	44.4	42.2	43.6	43.6	0.0	14.0	12.8	13.3	13.0	-0.3	136	89	112	112	0	400	288	350	350	0	448	392	418[a]	391	-27
Current mill average:					43.4	43.1	-0.3			13.0	12.9	-0.1			112	111	- 1			339	333	- 6			392	393	+ 1
Cumulative mill average:					43.2					12.7					111					326					385		
Mill factor, %					100.5					102.4					100.9					104.0					101.8		
Mill index, %					101.2					102.4					102.8					103.7					105.1		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL L

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Min.	Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Min.	Av.	Mill Av.	Diff.	Bursting Strength, p.s.i. gage Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Min.	Av.	Mill Av.	Diff.
12-22-62	W.F.	3	43.0	41.6	42.1	43.1	+1.0	13.0	12.0	12.6	12.0	-0.6	131	87	105	107	+ 2	352	280	321	346	+25	448	352	406[a]	413	+ 7
12-23-62	W.F.	3	43.8	42.0	43.2	43.7	+0.5	13.0	12.0	12.5	12.2	-0.3	133	89	114	117	+ 3	400	272	336	339	+ 3	448	360	394[a]	410	+16
1- 1-63	W.F.	3	44.2	43.4	43.8	43.6	-0.2	12.7	11.7	12.2	12.0	-0.2	149	102	120	119	- 1	408	304	354	355	+ 1	440	368	407[a]	430	+23
1- 6-63	W.F.	3	44.2	42.0	43.5	44.2	+0.7	13.2	12.1	12.7	12.3	-0.4	135	102	115	119	+ 4	400	280	341	344	+ 3	416	328	379[a]	417	+38
2- 1-63	W.F.	3	44.0	42.8	43.6	44.3	+0.7	13.0	12.0	12.4	12.1	-0.3	130	105	119	118	- 1	376	288	329	314	-15	440	360	400[a]	402	+ 2
2- 2-63	W.F.	3	44.0	43.0	43.8	44.1	+0.3	13.0	11.8	12.5	12.3	-0.2	131	95	118	117	- 1	384	288	335[a]	336	+ 1	424	336	379[a]	416	+37
Current mill average:					43.3	43.8	+0.5			12.5	12.2	-0.3			115	116	+ 1			336	339	+ 3			394	414	+20
Cumulative mill average:					43.3					12.6					111					342					392		
Mill factor, %					100.0					99.2					103.6					98.2					100.5		
Mill index, %					100.9					98.4					105.5					102.8					105.6		

TABLE XVI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL M

1-17-63	---	1	45.6	43.8	44.4	44.2	-0.2	14.0	12.8	13.6	13.0	-0.6	123	69	95	94	- 1	440	344	398[a]	350	-48	496	368	427[a]	410	-17
Current mill average:					44.4	44.2	-0.2			13.6	13.0	-0.6			95	94	- 1			398	350	-48			427	410	-17
Cumulative mill average:					43.4					12.7					105					406					421		
Mill factor, %					102.3					107.1					90.5					98.0					101.4		
Mill index, %					103.5					107.1					87.2					121.7					114.5		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XVII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL N

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Min.	Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Min.	Av.	Mill Av.	Diff.	Bursting Strength, p.s.i. gage Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Min.	Av.	Mill Av.	Diff.
No samples submitted																											

TABLE XVIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL O

1-31-63	W.F.	-	44.8	42.0	43.0	43.0	0.0	12.3	11.7	12.0	11.6	-0.4	133	101	117	113	- 4	400	256	307[a]	301	- 6	432	296	357[a]	333	-24
2- 1-63	W.F.	-	43.8	42.2	43.0	43.0	0.0	13.4	12.5	13.0	12.4	-0.6	125	95	107	103	- 4	368	304	343[a]	334	- 9	416	336	369[a]	357	-12
2- 8-63	W.F.	-	44.0	42.8	43.7	43.7	0.0	13.2	12.0	12.7	12.2	-0.5	131	93	115	112	- 3	368	272	336[a]	305	-31	400	328	367[a]	349	-18
2-15-63	W.F.	-	43.0	42.0	42.2	42.4	+0.2	12.2	11.3	11.8	11.6	-0.2	136	93	115	116	+ 1	336	288	307[a]	297	-10	416	336	365[a]	305	-60
2-28-63	W.F.	-	44.2	42.6	43.4	43.2	-0.2	12.8	11.8	12.4	12.2	-0.2	129	102	114	109	- 5	312	264	285[a]	287	+ 2	360	304	342[a]	331	-11
3- 1-63	W.F.	-	43.0	42.0	42.3	42.7	+0.4	12.3	11.7	11.9	11.8	-0.1	137	83	114	115	+ 1	336	264	301	273	-28	360	296	336[a]	340	+ 4
3- 8-63	W.F.	-	43.8	42.4	43.2	43.3	+0.1	13.1	11.8	12.4	12.2	-0.2	138	104	119	118	- 1	368	312	329[a]	301	-28	416	296	373[a]	333	-40
3-15-63	W.F.	-	44.2	42.2	43.2	43.0	-0.2	12.6	11.6	12.2	11.9	-0.3	130	90	108	110	+ 2	368	288	323[a]	296	-27	408	352	367[a]	334	-33
Current mill average:					43.0	43.0	0.0			12.3	12.0	-0.3			114	112	- 2			316	299	-17			360	335	-25
Cumulative mill average:					43.1					12.6					113					319					360		
Mill factor, %					99.8					97.6					100.9					99.1					100.0		
Mill index, %					100.2					96.9					104.6					96.6					96.5		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XIX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL P

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
2-3-63	W.F.	2	43.6	42.2	42.9	43.0	+0.1	14.0	13.1	13.6	13.6	0.0	122	82	101	106	+ 5	424	320	369	370	+ 1	432	344	391[a]	437	+46
2-9-63	WF1S	2	44.6	42.8	43.7	43.0	-0.7	14.1	13.2	13.7	13.4	-0.3	125	81	105	109	+ 4	400	320	359	364	+ 5	448	352	399[a]	431	+32
Current mill average:					43.3	43.0	-0.3			13.6	13.5	-0.1			103	108	+ 5			364	367	+ 3			395	434	+39
Cumulative mill average:					42.7					13.4					108					324					387		
Mill factor, %					101.4					101.5					95.4					112.3					102.1		
Mill index, %					100.9					107.1					94.5					111.3					105.9		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL C

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
1-25-63	W.B.	-	44.2	42.6	43.5	43.2	-0.3	12.5	11.5	12.0	11.6	-0.4	128	91	108	108	0	464	304	352	345	- 7	456	360	403[a]	431	+28
1-29-63	W.B.	-	44.0	42.2	43.0	42.9	-0.1	12.1	11.1	11.6	11.4	-0.2	134	81	105	111	+ 6	448	320	356	328	-28	440	352	397[a]	412	+15
1-31-63	W.B.	-	43.8	42.2	43.1	42.8	-0.3	12.2	11.3	11.9	11.6	-0.3	126	80	108	108	0	488	320	375[a]	337	-38	448	360	401[a]	427	+26
2-15-63	W.B.	-	44.4	42.2	43.3	43.1	-0.2	12.5	11.1	11.7	11.4	-0.3	133	83	106	112	+ 6	376	304	340	335	- 5	456	352	397[a]	415	+18
2-21-63	W.B.	-	43.6	41.8	42.4	42.1	-0.3	11.9	11.0	11.4	11.1	-0.3	128	85	106	107	+ 1	416	272	357	329	-28	440	336	390[a]	387	- 3
2-23-63	W.B.	-	44.0	42.0	42.7	42.9	+0.2	12.2	10.0	11.2	11.1	-0.1	126	91	108	107	- 1	376	288	341[a]	327	-14	456	360	407[a]	417	+10
3- 1-63	W.B.	-	44.0	42.0	43.0	42.8	-0.2	12.1	10.8	11.6	11.4	-0.2	130	80	109	112	+ 3	400	304	352	353	+ 1	432	344	381[a]	401	+20
3- 2-63	W.B.	-	44.2	42.2	43.3	43.0	-0.3	12.1	11.0	11.5	11.0	-0.5	127	99	111	109	- 2	384	280	341	360	+19	432	344	393[a]	423	+30
Current mill average:					43.0	42.9	-0.1			11.6	11.3	-0.3			108	109	+ 1			352	339	-13			396	414	+18
Cumulative mill average:					43.0					11.8					107					361					400		
Mill factor, %					100.0					98.3					100.9					97.5					99.0		
Mill index, %					100.2					91.3					99.1					107.6					106.2		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL S

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
2-13-63	W.B.	-	43.6	42.0	42.6	42.7	+0.1	13.1	12.0	12.6	12.8	+0.2	130	85	107	110	+ 3	400	336	362[a]	419	+57	432	376	411[a]	442	+31
2-13-63	W.B.	-	44.0	42.6	43.5	43.3	-0.2	13.2	12.3	12.8	12.9	+0.1	121	86	109	107	- 2	432	312	362[a]	432	+70	456	384	411[a]	452	+41
2-14-63	W.B.	-	44.4	42.4	43.5	42.0	-0.5	13.0	11.8	12.2	12.2	0.0	129	91	108	108	0	408	288	361[a]	427	+66	496	376	437[a]	457	+20
3-12-63	W.B.	-	44.2	42.4	43.6	43.3	-0.3	12.6	11.5	12.2	12.1	-0.1	132	77	105	108	+ 3	440	320	372	419	+47	448	376	405[a]	460	+55
Current mill average:					43.3	43.1	-0.2			12.5	12.5	0.0			107	108	+ 1			364	424	+60			416	453	+37
Cumulative mill average:					43.4					12.8					107					371					412		
Mill factor, %					99.8					97.7					100.0					98.1					101.0		
Mill index, %					100.9					98.4					98.2					111.3					111.5		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL T

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
1-15-63	W.F.	-	44.8	43.2	44.0	43.4	-0.6	13.2	11.1	12.5	12.7	+0.2	138	82	108	106	- 2	472	312	380[a]	347	-33	432	336	385[a]	367	-18
1-15-63	W.F.	-	43.8	41.8	42.4	43.2	+0.8	13.0	11.9	12.4	12.5	+0.1	134	84	112	105	- 7	416	312	382[a]	347	-35	392	344	363[a]	365	+ 2
2-11-63	W.F.	-	44.2	42.0	42.8	42.6	-0.2	13.1	12.2	12.7	12.8	+0.1	135	99	113	111	- 2	392	320	353[a]	321	-32	424	336	371[a]	390	+19
2-11-63	W.F.	-	43.6	41.8	42.4	42.4	0.0	13.1	11.9	12.6	12.6	0.0	138	79	112	110	- 2	392	312	346[a]	325	-21	416	344	371[a]	387	+16
Current mill average:						42.9	42.9	0.0			12.5	12.6	+0.1			111	108	- 3			365	335	-30			372	377	+ 5
Cumulative mill average:						42.5					12.2					110					342					362		
Mill factor, %						100.9					102.5					100.9					106.7					102.8		
Mill index, %						100.0					98.4					101.8					111.6					99.7		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL U

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.	Bursting Strength, p.s.i. gage Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff	Elmendorf Tear, g./sheet In Machine Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.
1-15-63	WF1S	1	42.4	41.6	42.1	42.8	+0.7	13.7	12.5	13.1	12.5	-0.6	119	91	106	110	+ 4	384	296	340	326	-14	464	336	384[a]	391	+ 7
1-17-63	WF1S	1	42.8	42.0	42.2	42.3	+0.1	13.7	12.5	13.1	12.4	-0.7	121	94	109	111	+ 2	384	312	349[a]	298	-51	464	352	406[a]	380	-26
1-31-63	WF1S	1	43.8	42.0	42.7	42.0	-0.7	14.0	12.0	12.9	12.3	-0.6	120	90	110	106	- 4	384	296	325	287	-38	432	336	376[a]	341	-35
2-12-63	WF1S	1	43.4	40.4	42.2	42.3	+0.1	14.0	12.1	12.8	12.2	-0.6	125	87	107	106	- 1	376	288	321	284	-37	408	336	375[a]	351	-24
2-14-63	WF1S	1	43.8	42.0	42.8	42.6	-0.2	14.1	12.0	13.0	12.3	-0.7	121	88	110	107	- 3	392	272	318	321	+ 3	432	344	371[a]	381	+10
2-22-62	WF1S	1	44.0	41.8	42.8	42.7	-0.1	13.9	12.0	13.1	12.3	-0.8	128	91	109	107	- 2	368	256	317	326	+ 9	400	352	369[a]	388	+19
					42.5	42.4	-0.1			13.0	12.4	-0.6			108	108	0			328	307	-21			380	372	- 8
					42.4					12.7					109					327					374		
					100.2					102.4					99.1					100.3					101.6		
					99.1					102.4					99.1					100.3					101.9		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXIV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL V

February and March, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.	Bursting Strength, p.s.i. gage Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.
1-14-63	W.F.	1	45.2	43.0	44.2	43.0	-1.2	13.7	12.2	13.0	12.6	-0.4	134	89	107	107	0	376	280	336[a]	294	-42	376	320	358[a]	368	+10
1-22-63	W.F.	1	44.6	41.2	42.8	42.5	-0.3	13.5	12.2	12.9	12.5	-0.4	130	84	102	110	+ 8	336	256	307[a]	289	-18	392	320	355[a]	344	-11
2- 6-63	W.F.	1	44.4	42.6	43.6	43.2	-0.4	13.3	12.2	12.8	12.8	0.0	132	95	107	109	+ 2	336	256	292[a]	303	+11	400	320	353[a]	369	+16
2-15-63	W.F.	1	45.4	42.6	44.1	42.7	-1.4	13.8	12.2	12.8	12.6	-0.2	132	89	107	111	+ 4	368	280	315[a]	313	- 2	400	320	364[a]	389	+25
Current mill average:					43.7	42.9	-0.8			12.9	12.6	-0.3			106	109	+ 3			312	300	-12			353	368	+10
Cumulative mill average:					43.4					12.3					111					295					355		
Mill factor, %					100.7					104.9					95.5					105.8					100.8		
Mill index, %					101.9					101.6					97.2					95.4					96.0		

TABLE XXV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL W

3-10-63	W.F.	2	44.2	42.2	43.7	43.3	-0.4	12.2	11.2	11.9	11.6	-0.3	136	93	120	124	+ 4	384	288	318[a]	298	-20	376	320	358[a]	336	-22
Current mill average:					43.7	43.3	-0.4			11.9	11.6	-0.3			120	124	+ 4			318	298	-20			358	336	-22
Cumulative mill average:					43.0					12.1					112					313					355		
Mill factor, %					101.6					98.3					107.1					101.6					100.8		
Mill index, %					101.9					93.7					110.1					97.2					96.0		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

and mill data described above, Tables XXVI and XXVII include under each test heading a column labeled "Diff." This column gives the differences between averages obtained at the Institute and those obtained at the mills. The data obtained at the Institute are used as the reference in calculating these differences.

The average test results obtained at the Institute and at the mills are summarized in Table XXVI for the current period. Given in this table for each mill is the difference for each test between the current mill average based on Institute data and the current mill average based on mill data. In addition, for each test the maximum difference encountered in comparing Institute and mill averages for individual sample lots is shown. In Table XXVII, the differences for each test between the current mill averages based on Institute data and those based on mill data shown in Table XXVI have been converted to per cent (based on Institute data as a reference). In addition, for purposes of comparison, the percentage differences from the previously report are shown.

A summary of the agreement obtained in the comparisons of Institute and mill test data for the current period is shown in Table XXVIII. This summary is based on the results given in Table XXVII. The tabulated data show the number of mills, and the percentage of all mills this number represents, whose average test results for the current period differ by designated percentages from the average test results obtained at the Institute. It may be noted from this summary that agreement between the results obtained at the Institute and those obtained at the mills was generally very good.

Preconditioning and testing data pertinent to the test results obtained at the mills during the current period are given in Table XXIX.

TABLE XXVI

SUMMARY OF TEST RESULT COMPARISONS (AVERAGE MILL AND INSTITUTE RESULTS) FOR FEBRUARY AND MARCH, 1963

Mills[a]	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S	T	U	V	W
No. of samples compared	5	8	0	16	9	2	6	8	3	7	7	6	1	0	8	2	8	4	4	6	4	1
Basis Weight																						
Institute	42.1	43.3		42.5	43.4	42.8	42.9	43.2	42.0	42.2	43.4	43.3	44.4		43.0	43.3	43.0	43.3	42.9	42.5	43.7	43.7
Mill	42.3	43.6		42.8	43.7	42.5	42.7	43.4	42.7	41.9	43.1	43.8	44.2		43.0	43.0	42.9	43.1	42.9	42.4	42.9	43.3
Av. diff.[b]	+0.2	+0.3		+0.3	+0.3	-0.3	-0.2	+0.2	+0.7	-0.3	-0.3	+0.5	-0.2		0.0	-0.3	-0.1	-0.2	0.0	-0.1	-0.8	-0.4
Max. diff.[c]	+0.8	+0.6		+0.8	+0.8	-0.3	-0.7	+0.7	+1.0	-1.1	-0.5	+1.0	-0.2		+0.4	-0.7	-0.3	-0.5	+0.8	+0.7	-1.4	-0.4
Caliper																						
Institute	12.6	13.3		12.2	12.3	12.6	13.0	13.7	12.2	13.2	13.0	12.5	13.6		12.3	13.6	11.6	12.5	12.5	13.0	12.9	11.9
Mill	12.3	13.0		12.0	12.3	12.3	13.1	13.2	12.3	12.6	12.9	12.2	13.0		12.0	13.5	11.3	12.5	12.6	12.4	12.6	11.6
Av. diff.[b]	-0.3	-0.3		-0.2	0.0	-0.3	+0.1	-0.5	+0.1	-0.6	-0.1	-0.3	-0.6		-0.3	-0.1	-0.3	0.0	+0.1	-0.6	-0.3	-0.3
Max. diff.[c]	-0.5	-0.5		-0.4	-0.3	-0.4	+0.1	-1.2	±0.2	-1.1	-0.3	-0.6	-0.6		-0.6	-0.3	-0.5	+0.2	+0.2	-0.8	-0.4	-0.3
Bursting Strength																						
Institute	113	107		107	107	102	112	113	101	112	112	115	95		114	103	108	107	111	108	106	120
Mill	121	105		110	109	106	113	111	104	114	111	116	94		112	108	109	108	108	108	109	124
Av. diff.[b]	+8	-2		+3	+2	+4	+1	-2	+3	+2	-1	+1	-1		-2	+5	+1	+1	-3	0	+3	+4
Max. diff.[c]	+12	-5		+7	+9	+6	+5	-8	+8	±7	-4	+4	-1		-5	+5	+6	+3	-7	±4	+8	+4
Tearing Strength, in																						
Institute	357	325		302	351	293	297	301	346	279	339	336	398		316	364	352	364	365	328	312	318
Mill	307	299		265	--	327	261	294	356	279	333	339	350		299	367	339	424	335	307	300	298
Av. diff.[b]	-50	-26		-37	--	+34	-36	-7	+10	0	-6	+3	-48		-17	+3	-13	+60	-30	-21	-12	-20
Max. diff.[c]	-68	-37		-64	--	+38	-51	-29	+19	+40	-20	+25	-48		-31	+5	-38	+70	-35	-51	-42	-20
Tearing Strength, cross																						
Institute	411	368		357	394	382	356	359	391	336	392	394	427		360	395	396	416	372	380	358	358
Mill	365	357		355	--	398	346	374	395	352	393	414	410		335	434	414	453	377	372	368	336
Av. diff.[b]	-46	-11		-2	--	+16	-10	+15	+4	+16	+1	+20	-17		-25	+39	+18	+37	+5	-8	+10	-22
Max. diff.[c]	-55	-33		+27	--	+35	-29	+33	+28	+55	-27	+38	-17		-60	+46	+30	+55	+19	-35	+25	-22

[a] *Comparison* based on averages involved only those samples on which mill test data were submitted.
[b] Average difference is the difference between the Institute mill average and the mill average based on mill test data.
[c] Maximum difference encountered in comparing the Institute average and the mill averages for any sample submitted by that particular mill.

TABLE XXVII

COMPARISON OF INSTITUTE-MILL DIFFERENCES FOR FEBRUARY AND MARCH, 1963
(Average Difference, per cent)

Mill	Period	Basis Weight	Caliper	Bursting Strength	Tear, in	Tear, cross
A	Oct.-Nov.	--	--	--	--	--
	Dec.-Jan.	--	--	--	--	--
	Current	+0.5	-2	+7	-14	-11
B	Oct.-Nov.	-0.7	-4	-2	-2	+7
	Dec.-Jan.	+0.2	-2	+1	-6	+2
	Current	+0.7	-2	-2	-8	-3
C	Oct.-Nov.	--	--	--	--	--
	Dec.-Jan.	--	--	--	--	--
	Current	--	--	--	--	--
D	Oct.-Nov.	+1	-0.8	+0.9	-9	-0.8
	Dec.-Jan.	+0.5	-0.8	+3	-7	+2
	Current	+0.7	-2	+3	-12	-0.6
E	Oct.-Nov.	0	-2	+7	--	--
	Dec.-Jan.	-1	-0.8	+6	--	--
	Current	+0.7	0	+2	--	--
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
I	Oct.-Nov.	+1	0	0	-1	+2
	Dec.-Jan.	+0.5	+0.8	-0.9	+0.9	+3
	Current	+2	+0.8	+3	+3	+1
J	Oct.-Nov.	+0.5	-5	-2	+7	+13
	Dec.-Jan.	-0.7	-4	-3	+5	+6
	Current	-0.7	-5	+2	0	+5
K	Oct.-Nov.	+0.7	-0.8	+3	+2	+3
	Dec.-Jan.	+0.2	+0.8	0	-4	+3
	Current	-0.7	-0.8	-0.9	-2	+0.3

Mill	Period	Basis Weight	Caliper	Bursting Strength	Tear, in	Tear, cross
L	Oct.-Nov.	+2	-2	+0.9	+5	+3
	Dec.-Jan.	+2	-2	0	+0.3	+5
	Current	+1	-2	+0.9	+0.9	+5
M	Oct.-Nov.	+0.5	-2	+3	-16	-10
	Dec.-Jan.	0	-2	-0.9	-11	-4
	Current	-0.5	-4	-1	-12	-4
N	Oct.-Nov.	--	--	--	--	--
	Dec.-Jan.	--	--	--	--	--
	Current	--	--	--	--	--
O	Oct.-Nov.	0	-4	-4	-5	-5
	Dec.-Jan.	-0.2	-3	-2	-7	-5
	Current	0	-2	-2	-5	-7
P	Oct.-Nov.	+0.7	-4	-9	+9	+10
	Dec.-Jan.	+0.7	-3	+2	+9	+16
	Current	-0.7	-0.7	+5	+0.8	+10
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
	[illegible]					
U	Oct.-Nov.	+1	-4	[illegible]	[illegible]	[illegible]
	Dec.-Jan.	0	-4	[illegible]	[illegible]	[illegible]
	Current	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
V	Oct.-Nov.	-0.9	-4	0	-6	-2
	Dec.-Jan.	-2	-2	+0.9	-1	+0.3
	Current	-2	-2	+3	-4	+3
W	Oct.-Nov.	+0.5	-2	-2	+1	-0.5
	Dec.-Jan.	+0.7	-2	0	+6	+4
	Current	-0.9	-3	+3	-6	-6

TABLE XXVIII

SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL RESULTS

February and March, 1963

	Average Percentage Difference Between Institute and Mill Test Results								
	±0.5	±1	±2	±3	±4	±5	±7.5	±10	±16
Basis weight									
Number of mills	9	18	20						
Percentage of all mills	45.0	90.0	100.0						
Caliper									
Number of mills	2	7	14	16	18	20			
Percentage of all mills	10.0	35.0	70.0	80.0	90.0	100.0			
Bursting strength									
Number of mills	1	7	12	17	18	19	20		
Percentage of all mills	5.0	35.0	60.0	85.0	90.0	95.0	100.0		
Tearing strength, in									
Number of mills	1	3	5	6	8	9	11	13	19
Percentage of all mills	5.3	15.8	26.3	31.6	42.1	47.4	57.9	68.4	100.0
Tearing strength, cross									
Number of mills	1	4	5	8	11	14	16	18	19
Percentage of all mills	5.3	21.1	26.3	42.1	57.9	73.7	84.2	94.7	100.0

TABLE XXIX

PRECONDITIONING AND CONDITIONING DATA FOR MILL TESTS
February and March 1961

Mill Code	Preconditioning R.H., %	Preconditioning Temp., °F.	Preconditioning Time, hr.	Conditioning R.H., %	Conditioning Temp., °F.	Conditioning Time, hr.
A	50-51	72-73	2--5?	5?	72	48
B	48-50	69-74	3-5?	48-5?	69-74	3
C			No samples submitted			
D	35	73	2-	5?	73	48
E		None		5?	73	24-144
F		None		55-5?	70-72	--
G		None		45-5?	60-75	--
H	50	72	2-		None	
I	50	73	2-		None	
J	50	73	72-120	5?	73	72-120
K	50	73	2-	5?	73	24
L		None		5?	73	24
M	32	100	2-	5?	73	24
N			No samples submitted			
O	34-37	72-73	3	48-52	71-73	16
P	50	73	120	50	72-73	120
Q		None		50-51	73-74	48
S	53	72	48	50	73	48
T		None		50	73	24
U	50	72-73	2-	50	72-73	24
V	36-38	72-81	1.5	50	73	24
W		None		50	73	24

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